(1) GENERAL INFORMATION:

- (i) APPLICANT: Fischer, Gerald W.
 Schuman, Richard F.
 Wong, Hing
 Stinson, Jeffrey L.
- (ii) TITLE OF INVENTION: OPSONIC AND PROTECTIVE MONOCLONAL AND CHIMERIC ANTIBODIES SPECIFIC FOR LIPOTEICHOIC ACID OF GRAM POSITIVE BACTERIA
- (iii) NUMBER OF SEQUENCES: 89
- (iv) CORRESPONDENCE ADDRESS:
 - (A) ADDRESSEE: FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, LLP
 - (B) STREET: 1300 I Street, NW
 - (C) CITY: Washington
 - (D) STATE: DC
 - (E) COUNTRY: USA
 - (F) ZIP: 20005-3315
- (v) COMPUTER READABLE FORM:
 - (A) MEDIUM TYPE: Floppy disk
 - (B) COMPUTER: IBM PC compatible
 - (C) OPERATING SYSTEM: PC-DOS/MS-DOS
 - (D) SOFTWARE: PatentIn Release #1.0, Version #1.30
- (vi) CURRENT APPLICATION DATA:
 - (A) APPLICATION NUMBER: US 09/097,055
 - (B) FILING DATE: 15-JUN-1998
- (viii) ATTORNEY/AGENT INFORMATION:
 - (A) NAME: Einaudi, Carol P.
 - (B) REGISTRATION NUMBER: 32,220
 - (C) REFERENCE/DOCKET NUMBER: 04995.0041-00000
 - (ix) TELECOMMUNICATION INFORMATION:
 - (A) TELEPHONE: 202-408-4000
 - (B) TELEFAX: 202-408-4400
- (2) INFORMATION FOR SEQ ID NO:1:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 15 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: peptide



Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser Pro 1 5 10 15

- (2) INFORMATION FOR SEQ ID NO:2:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 15 amino acids
 - (B) TYPE: amino acid
 - (C) STRANDEDNESS:
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: peptide
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:2:

Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly Arg
1 5 10 15

- (2) INFORMATION FOR SEQ ID NO:3:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 21 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:3:

TGAATTTTCT GTATGAGGTT T

21

- (2) INFORMATION FOR SEQ ID NO:4:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 30 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: cDNA
 - (ix) FEATURE:
 - (A) NAME/KEY: CDS
 - (B) LOCATION: 1..30
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:4:

- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:7:

Gly Xaa His Ala Asp Arg Val Tyr Gly Ala 1 5 10

(2) INFORMATION FOR SEQ ID NO:8:

(1) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs	
(B) TYPE: nucleic acid	•
(C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(b) Toronogi: Timear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS	
(B) LOCATION: 157	
	•
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:8:	
GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT	48
Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 10 15	
1 5 10 15	
CGT GGG GCC	57
Arg Gly Ala	
•	
(2) INFORMATION FOR SEQ ID NO:9:	
(2) INFORMATION FOR BEG ID NO.79:	
(i) SEQUENCE CHARACTERISTICS:	*
(A) LENGTH: 19 amino acids (B) TYPE: amino acid	
(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:9:	
Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly	
1 5 10 15	
Arg Gly Ala	
(2) INFORMATION FOR SEQ ID NO:10:	
(i) SEQUENCE CHARACTERISTICS:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs	
(i) SEQUENCE CHARACTERISTICS:	

(i) SEQUENCE CHARACTERISTICS:

(ii) MOLECULE TYPE: cDNA

(A) NAME/KEY: CDS
(B) LOCATION: 1..57

(ix) FEATURE:

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:10:	
GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15	į
ATT GGG GCC Ile Gly Ala	,
(2) INFORMATION FOR SEQ ID NO:11:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:11:	
Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15	
Ile-Gly-Ala	
(2) INFORMATION FOR SEQ ID NO:12:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:12:	
GGG GCT TGG AAG GCT TTG TTT AGT CAT TCT TAT CGT CCT CGG GGT TCG Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 1 5 10 15	3
GCT GGG GCC Ala Gly Ala	,

(2) INFORMATION FOR SEQ ID NO:13:

(ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:13: Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 1 5 10 15 Ala Gly Ala (2) INFORMATION FOR SEQ ID NO:14: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT GGY Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acids (C) TYPE: amino acids (C) TYPE: maino acids (C) TOPOLOGY: linear (ii) MOLECULE TYPE: protein	-
Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 1 5 10 15 Ala Gly Ala (2) INFORMATION FOR SEQ ID NO:14: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) Type: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT GIY Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (C) TOPOLOGY: linear	
Ala Gly Ala (2) INFORMATION FOR SEQ ID NO:14: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (CD) TOPOLOGY: linear	
(2) INFORMATION FOR SEQ ID NO:14: (i) SEQUENCE CHARACTERISTICS:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GCT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	1
(A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear (ii) MOLECULE TYPE: cDNA (ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA (ix) FEATURE:	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(A) NAME/KEY: CDS (B) LOCATION: 157 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:14: GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
GGG GCT AGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GGT Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15 CGT GGG GCC Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
Arg Gly Ala (2) INFORMATION FOR SEQ ID NO:15: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	48
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	57
(A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE, protein	
(II) MODECODE IIFE: procein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:15:	
Gly Ala Arg His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15	
Arg Gly Ala	

(i) SEQUENCE CHARACTERISTICS:

	and the contract of the contra	
(2)	INFORMATION FOR SEQ ID NO:16:	
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:16:	
	GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 5 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:17:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:17:	
Gly 1	Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 5 10 15	
Arg	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:18:	
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
	(ii) MOLECULE TYPE: cDNA	

(ix) FEATURE:

. (A) NAME/KEY: CDS

(B) LOCATION:	L	• ,•	51	
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	(XI) SEQUENCE DESCRIPTION: SEQ ID NO.10.	
GGG Gly 1	GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 5 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:19:	r
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:19:	
_	Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 5 10 15	
Arg	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:20:	
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:20:	
	GCT CAG GTG GCT GTT TTG TAT CCT CCT TTG GCT GAT GCT ACT GAG Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu 5 10 15	48
	GGG GCC Glv Ala	5

(2)	INFORMATION FOR SEQ ID NO:21:	
	(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
,	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:21:	
Gly 1	Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu 5 10 15	
Leu	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:22:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:22:	
	GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:23:	
	(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:23:	
Gly 1	Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 15	

(2)	INFORMATION FOR SEQ ID NO:24:	
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:24:	
GGG Gly 1	GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 15	3
	GGG GCC Gly Ala	7
(2)	INFORMATION FOR SEQ ID NO:25:	
	(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:25:	
Gly 1	Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 5 10 15	
Ile	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:26:	
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	

(ii) MOLECULE TYPE: cDNA

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:26:	
GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 15	4
CCT GGG GCC Pro Gly Ala	5
(2) INFORMATION FOR SEQ ID NO:27:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:27:	
Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 10 15	
Pro Gly Ala	
(2) INFORMATION FOR SEQ ID NO:28:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:28:	
GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 10 15	48
CCT GGG GCC Pro Gly Ala	57

(ix) FEATURE:
(A) NAME/KEY: CDS
(B) LOCATION: 1..57

(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:29:	
Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu A	rg Ser 15
Pro Gly Ala	'
(2) INFORMATION FOR SEQ ID NO:30:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 57 base pairs(B) TYPE: nucleic acid(C) STRANDEDNESS: single(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	· .
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:30:	
GGG GCT TGG CGG AAG TAT TTT TCT TAT CAT CAT GCG CAT CTT TGG Gly Ala Trp Arg Lys Tyr Phe Ser Tyr His His Ala His Leu C	
CCT GGG GCC Pro Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:31:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:31:	•

(2) INFORMATION FOR SEQ ID NO:29:

(i) SEQUENCE CHARACTERISTICS:

- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:33:

Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser

1 10 15

Pro Gly Ala

- (2) INFORMATION FOR SEQ ID NO:34:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 57 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear

(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:34:	
GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 10 15	48
CCT GGG GCC Pro Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:35:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:35:	
Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser 1 5 10 15	
Pro Gly Ala	
(2) INFORMATION FOR SEQ ID NO:36:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:36:	
GGG GCT TGG CGT ATG TAT TTT TCT CAT CGT CAT GCG CAT CTT CGT AGT	48

(ii) MOLECULE TYPE: cDNA

10

Gly Ala Trp Arg Met Tyr Phe Ser His Arg His Ala His Leu Arg Ser

5

	1					•
(2)	INFORMATION FOR SEQ ID NO:37:	F				
	(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	(
	(ii) MOLECULE TYPE: protein	·				
	(xi) SEQUENCE DESCRIPTION: SEQ ID	NO:37:				
Gly 1	Ala Trp Arg Met Tyr Phe Ser His Arg		a His	Leu Arg ` 15	Ser	
Pro	Gly Ala		1			
(2)	INFORMATION FOR SEQ ID NO:38:					
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	,	\ \ \			
	(ii) MOLECULE TYPE: cDNA		\ :			
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157		•			
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO	0:38:				
	GCT CGT CGG CAT GGT AAT TTT TCT CAT Ala Arg Arg His Gly Asn Phe Ser His 5 10					48
	GGG GCC Gly Ala					57
(2)	INFORMATION FOR SEQ ID NO:39:			,		
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids					

(B) TYPE: amino acid(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

Ile Gly Ala	
(2) INFORMATION FOR SEQ ID NO:40:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	1
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:40:	
GGG GCT TGG CAT TGG CGT CAT CGT ATT CCT CTT CAG CTT GCT GCT GGT Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15	48
CGT GGG GCC Arg Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:41:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:41:	
Gly Ala Trp His Trp Arg His Arg Ile Pro Leu Gln Leu Ala Ala Gly 1 5 10 15	
Arg Gly Ala	
(2) INFORMATION FOR SEQ ID NO:42:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 57 base pairs(B) TYPE: nucleic acid(C) STRANDEDNESS: single	

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:39:

Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15

(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1..57 (xi) SEQUENCE DESCRIPTION: SEQ ID NO:42: GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 ATT GGG GCC Ile Gly Ala (2) INFORMATION FOR SEQ ID NO:43: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear -7<u>-77-7-</u> (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:43: Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu

48

57

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: cDNA

- (2) INFORMATION FOR SEQ ID NO:44:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 57 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: cDNA
 - (ix) FEATURE:

Ile Gly Ala

- (A) NAME/KEY: CDS
- (B) LOCATION: 1..57
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:44:

	GCT GAT TGG ATT ACT TTT CAT CGT CGT CAT CAT GAT CGT GTT CTT Ala Asp Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 5 10 15	48
	GGG GCC Gly Ala	57
(2)	INFORMATION FOR SEQ ID NO:45:	
	(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: protein	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:45:	
Gly 1	Ala Asp Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 5 10 15	
Ser	Gly Ala	
(2)	INFORMATION FOR SEQ ID NO:46:	
	(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
	(ii) MOLECULE TYPE: cDNA	
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
	(xi) SEQUENCE DESCRIPTION: SEQ ID NO:46:	
	GCT GGT TGG ATT ACT TTT CAT CGT CGT CAT CAT GAT CGT GTT CTT Ala Gly Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 5 10 15	48
	GGG GCC Gly Ala	57
(2)	THEODMARION FOR CHO. ID. NO. 47	

- (2) INFORMATION FOR SEQ ID NO:47:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 19 amino acids
 - (B) TYPE: amino acid

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:47:	
Gly Ala Gly Trp Ile Thr Phe His Arg Arg His His Asp Arg Val Leu 1 5 10 15	
Ser Gly Ala	
(2) INFORMATION FOR SEQ ID NO:48:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	1
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:48:	
GGG GCT GGG AAG GCT ATG TTT AGT CAT TCT TAT CGT CAT CGG GGT TCG Gly Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser 1 5 10 15	48
GCT GGG GCC Ala Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:49:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:49:	
Gly Ala Gly Lys Ala Met Phe Ser His Ser Tyr Arg His Arg Gly Ser 1 5 10 15	
Ala Gly Ala	
(2) INFORMATION FOR SEQ ID NO:50:	•

(D) TOPOLOGY: linear

(ii) MOLECULE TYPE: protein

	(i)	(A) (B) (C)	ENCE C LENGT TYPE: STRANI TOPOLO	H: 57 nucl DEDNE	bas eic SS:	se p aci sin	airs d		1	٠.						-
	(ii)	MOLE	CULE T	YPE:	CDNA	A			,							
	(ix)		URE: NAME/I LOCATI			57						. ••				,
	(xi)	SEQUE	ENCE DE	ESCRI	PTIC	N: 5	SEQ :	ID NO	0:50	:						
GGG Gly 1	GCT (GAT TO Asp Ti	GG ATT	ACT Thr	TTT Phe	CAT His	CGT Arg	CGT Arg 10	CAT His	CAT	GAT Asp	CGT Arg`	GTT Val 15	CTT Leu		48
	GGG (٠										57
				٠												
(2)	INFO	RMATIC	N FOR	SEQ :	ID N	0:51	.:			. 1						
	į)	(UENCE A) LEN B) TYP D) TOP	GTH: E: an	19 mino	amin aci	o ac		,							
	(ii) MOL	ECULE	TYPE:	pr	otei	n	-			. 4				•	•
	(xi	.) SEQ	UENCE :	DESCR	RIPT	ION:	SEQ	ID	NO:5	1:						
Gly 1	Ala A	sp Tr	p Ile ' 5	Thr F	he I	His .	Arg	Arg	His	His	Asp	Arg	Val 15	Leu	•	
Ser	Gly A	.la	1													
(2)	INFOR	MATIO	N FOR S	SEQ I	D NO):52	:									
	(i)	(A) 1 (B) 7 (C) 8	NCE CHA LENGTH: TYPE: r STRANDE	: 57 nucle EDNES	base ic a S: s	pa: cid ingl	irs				· ·.					٠

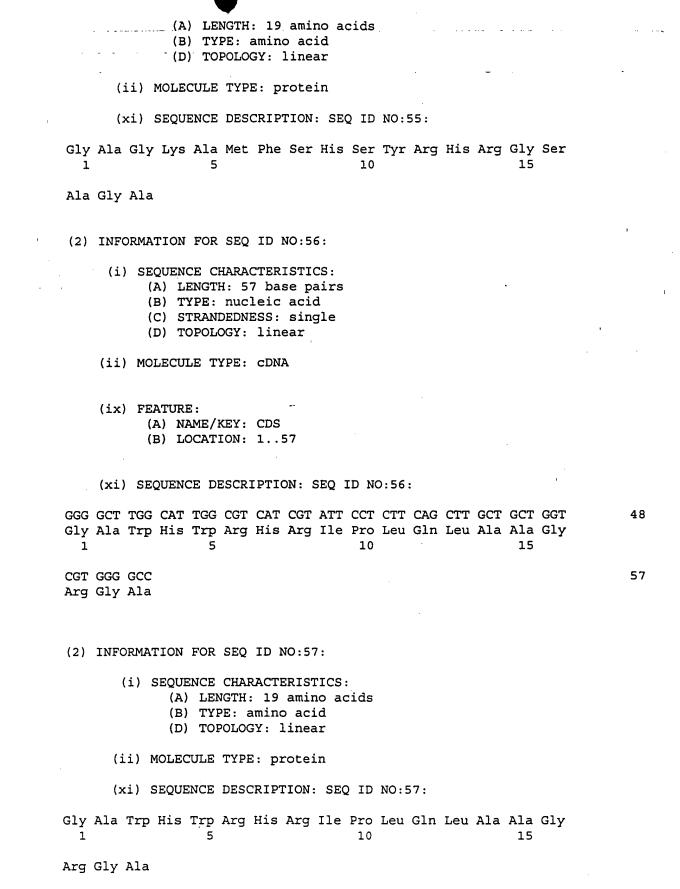
(ii) MOLECULE TYPE: cDNA

(A) NAME/KEY: CDS
(B) LOCATION: 1..57

(ix) FEATURE:

	(xi _,)	SEQ	JENC	E D	ESCR.	IPTI	ON :	SEQ :	ID NO	0:52	:							
	GCT Ala																	48
	GGG							,										57
Pro	Gly	Ala																
(2)	INFO	RMAT	ION	FOR	SEQ	ID 1	NO : 5	3:										
		i) SI	(A) (B)	LEI TYI	NGTH PE: a	: 19 amin	ERIS amin o ac: linea	no ad id			·							•
i	(i	i) MC	OLEC	ULE	TYP	E: p:	rote	in						•				
	(x	:i) SI	EQUE	NCE	DES	CRIP'	TION	: SE(Q ID	NO:	53:					•	•	
•	Ala		Arg	His 5	Met	Leu	Ala	Arg	Trp	Ser	Arg	Leu	Leu	Ala 15	Val			
	Gly																	
(2)	INFO	RMAT	ON	FOR	SEQ	ID 1	NO : 54	1:									÷	
	(i)	(B) (C)	LE TY ST	NGTI PE: RANI	I: 57	7 bas leic ESS:	se pa acio sino	airs 1			·						•	
	(ii)	MOLE									.							
	/ i = 1	מגשש	TE E															
	(IX)		NA	ME/I	ŒY:		57											
	(xi)	SEQU	JENC	E DE	ESCRI	PTIC	ON: S	SEQ]	D NO	0:54	:	-						
	GCT (48
	GGG (57
(2)	TNEO	рматт	ON	F∩P	SFO	א חז	JO • 5 5											

- (2) INFORMATION FOR SEQ ID NO:55:
 - (i) SEQUENCE CHARACTERISTICS:



(2) INFORMATION FOR SEQ ID NO:58:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:58:	
GGG GCT CGT CGG CAT GGT AAT TTT TCT CAT TTT TTT CAT CGG TCG TTG Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15	48
ATT GGG GCC Ile Gly Ala	57
- · · · · · · · · · · · · · · · · · · ·	
(2) INFORMATION FOR SEQ ID NO:59:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 19 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:59:	
Gly Ala Arg Arg His Gly Asn Phe Ser His Phe Phe His Arg Ser Leu 1 5 10 15	
Ile Gly Ala	
(2) INFORMATION FOR SEQ ID NO:60:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single	

(ix) FEATURE:

(ii) MOLECULE TYPE: cDNA

(A) NAME/KEY: CDS
. (B) LOCATION: 1..57

(D) TOPOLOGY: linear

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:60:	
GGG GCT TGG AAG GCT TTG TTT AGT CAT TCT TAT CGT CCT CGG GGT TCG Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 1 5 10 15	48
GCT GGG GCC Ala Gly Ala	57
(2) INFORMATION FOR SEQ ID NO:61:	
(i) SEQUENCE CHARACTERISTICS:(A) LENGTH: 19 amino acids(B) TYPE: amino acid(D) TOPOLOGY: linear	
(ii) MOLECULE TYPE: protein	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:61:	
Gly Ala Trp Lys Ala Leu Phe Ser His Ser Tyr Arg Pro Arg Gly Ser 1 5 10 15	
Ala Gly Ala	
(2) INFORMATION FOR SEQ ID NO:62:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 57 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
(ii) MOLECULE TYPE: cDNA	
(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 157	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:62:	
GGG GCT CAG GTG GCT GTT TTG TAT CCT CCT TTG GCT GAT GCT ACT GAG Gly Ala Gln Val Ala Val Leu Tyr Pro Pro Leu Ala Asp Ala Thr Glu 1 5 10 15	.48
CTT GGG GCC Leu Gly Ala	57

95

(2) INFORMATION FOR SEQ ID NO:63:

		YPE: amino						,			
	(ii) MOLECUL	E TYPE: p	rotein		•						
	(xi) SEQUENC	E DESCRIP	rion: SE	Q ID	NO:	53:					
Gly 1	Ala Gln Val Al	a Val Leu 5	Tyr Pro	Pro 10	Leu	Ala	Asp	Ala	Thr 15	Glu	
Leu	Gly Ala									,	1
(2)	INFORMATION FO	R SEQ ID I	NO:64:							·	
	(B) TYPE (C) STRA	CHARACTER TH: 57 bas : nucleic NDEDNESS: LOGY: line	se pairs acid single			ı					
	(ii) MOLECULE	TYPE: cDN	A		,	. /			-		
		KEY: CDS	57				\				
							1				
	(xi) SEQUENCE	DESCRIPTION OF THE PROPERTY OF	ON: SEQ	ID NO	D:64	:	1				
	GCT TGG CGT AT Ala Trp Arg Me	G TAT TTT	TCT CAT	CGT	CAT	GCG					48
Gly 1 CCT	GCT TGG CGT AT Ala Trp Arg Me	G TAT TTT t Tyr Phe	TCT CAT	CGT Arg	CAT	GCG			Arg		**
Gly 1 CCT	GCT TGG CGT AT Ala Trp Arg Me	G TAT TTT t Tyr Phe	TCT CAT	CGT Arg	CAT	GCG			Arg		**
Gly 1 CCT Pro	GCT TGG CGT AT Ala Trp Arg Me	G TAT TTT t Tyr Phe 5	TCT CAT Ser His	CGT Arg	CAT	GCG			Arg		48 57
Gly 1 CCT Pro	GCT TGG CGT AT Ala Trp Arg Me GGG GCC Gly Ala INFORMATION FO (i) SEQUENC (A) L (B) T	G TAT TTT t Tyr Phe 5	TCT CAT Ser His NO:65: ERISTICS amino a cacid	CGT Arg 10	CAT	GCG			Arg		4.
Gly 1 CCT Pro	GCT TGG CGT AT Ala Trp Arg Me GGG GCC Gly Ala INFORMATION FO (i) SEQUENC (A) L (B) T	R SEQ ID I E CHARACTI ENGTH: 19 YPE: amino	TCT CAT Ser His NO:65: ERISTICS amino a cacid linear	CGT Arg 10	CAT	GCG			Arg		4.
Gly 1 CCT Pro	GCT TGG CGT AT Ala Trp Arg Me GGG GCC Gly Ala INFORMATION FO (i) SEQUENC (A) L (B) T (D) T	G TAT TTT T TYP Phe S R SEQ ID I E CHARACTI ENGTH: 19 YPE: amino OPOLOGY: I	TCT CAT Ser His NO:65: ERISTICS amino a cacid linear rotein	CGT Arg 10	CAT	GCG Ala			Arg		4.
Gly 1 CCT Pro	GCT TGG CGT AT Ala Trp Arg Me GGG GCC Gly Ala INFORMATION FO (i) SEQUENC (A) L (B) T (D) T (ii) MOLECUL (xi) SEQUENC	G TAT TTT T TYP Phe S R SEQ ID I E CHARACTI ENGTH: 19 YPE: amino OPOLOGY: I E TYPE: pr E DESCRIPT	TCT CAT Ser His NO:65: ERISTICS amino a cacid linear rotein	CGT Arg 10	CAT His	GCG Ala	His	Lieu	Arg 15	Ser	4.

(i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 19 amino acids

- (2) INFORMATION FOR SEQ ID NO:66:
 - (i) SEOUENCE CHARACTERISTICS:
 - (A) LENGTH: 30 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: cDNA
 - (ix) FEATURE:
 - (A) NAME/KEY: CDS
 - (B) LOCATION: 1..30
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:66:

GGG GCT CAT GCG GAT AGG GTT TAT GGG GCC Gly Ala His Ala Asp Arg Val Tyr Gly Ala 1 5 10

30

- (2) INFORMATION FOR SEQ ID NO:67:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 10 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: protein
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:67:

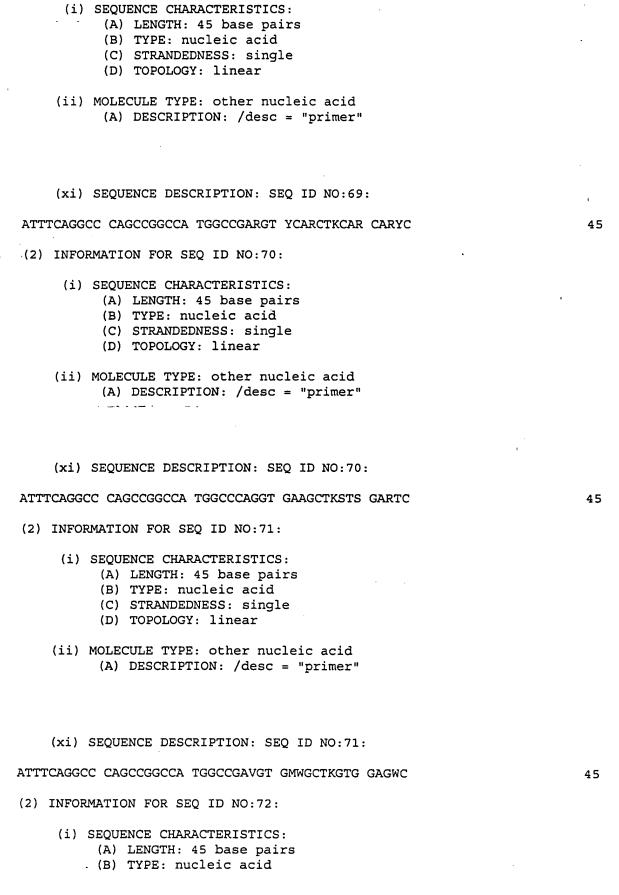
Gly Ala His Ala Asp Arg Val Tyr Gly Ala 1 5 10

- (2) INFORMATION FOR SEQ ID NO:68:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 45 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: other nucleic acid
 (A) DESCRIPTION: /desc = "primer"
 - (xi) SEQUENCE DESCRIPTION: SEQ ID NO:68:

ATTTCAGGCC CAGCCGGCCA TGGCCGARGT RMAGCTKSAK GAGWC

45

(2) INFORMATION FOR SEQ ID NO:69:





- (C) STRANDEDNESS: single
- (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: other nucleic acid
 (A) DESCRIPTION: /desc = "primer"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:72:

ATTTCAGGCC CAGCCGGCCA TGGCCCAGGT BCARCTKMAR SARTC

45

- (2) INFORMATION FOR SEQ ID NO:73:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:73:
 GCTGCCACCG CCACCTGMRG AGACDGTGAS TGARG

35

- (2) INFORMATION FOR SEQ ID NO:74:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) MOLECULE TYPE: other nucleic acid
 (A) DESCRIPTION: /desc = "primer"
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:74:
 GCTGCCACCG CCACCTGMRG AGACDGTGAS MGTRG

35

- (2) INFORMATION FOR SEQ ID NO:75:
 - (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 35 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
 - (ii) .MOLECULE TYPE: other nucleic acid

(A)	DESCRIPTION:	/desc -	nrinon
150/	DESCRIPTION:	/uesc =	יי אפתורוטיי

		•
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:75	: :	
GCTGCCACCG CCACCTGMRG AGACDGTGAS CAGRG		35
(2) INFORMATION FOR SEQ ID NO:76:	* .	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 32 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 		1
<pre>(ii) MOLECULE TYPE: other nucleic acid</pre>		
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:76:	·	
CCCGGGCCAC CATGGAGACA GACACACTCC TG		32
(2) INFORMATION FOR SEQ ID NO:77:	e est	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 35 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 		
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>		
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:77:		
CCCGGGCCAC CATGGATTTT CAAGTGCAGA TTTTC		35
(2) INFORMATION FOR SEQ ID NO:78:		
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 32 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single		

(ii) MOLECULE TYPE: other nucleic acid

(A) DESCRIPTION: /desc = "primer"

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:78:	_
CCCGGGCCAC-CATGGAGWCA CAKWCTCAGG TC	32
(2) INFORMATION FOR SEQ ID NO:79:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 33 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	•
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:79:	
CCCGGGCCAC CATGKCCCCW RCTCAGYTTC TKG	33
(2) INFORMATION FOR SEQ ID NO:80:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 31 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	
(with GROVENCE PROGREDATION one to ve	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:80:	
CCCGGGCACC ATGAAGTTGC CTGTTAGGCT G	31
(2) INFORMATION FOR SEQ ID NO:81:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 23 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	

101

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:81:

GCACCTCCAG ATGTTAACTG CTC

(2) INFORMATION FOR SEQ ID NO:82:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 54 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:82:	
TAATATCGCG ACAGCTACAG GTGTCCACTC CCGAAGTGAT GCTGGTGGAG WCTG	54
(2) INFORMATION FOR SEQ ID NO:83:	
(i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 30 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:83:	
TTATAGAATT CTGAGGAGAC GGTGAGTGAG	30
(2) INFORMATION FOR SEQ ID NO:84:	
 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 29 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 	
<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>	
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:84:	
TTAGGCGATA TCGTTCTCTC CCAGTCTCC	29
11.1000 100101010 00.01010	ر ہے

(2) INFORMATION FOR SEQ ID NO:85:

(i) SEQUENCE CHARACTERISTICS:

	<pre>(ii) MOLECULE TYPE: other nucleic acid (A) DESCRIPTION: /desc = "primer"</pre>															
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:85:																
	(XI) SE	Orem	ים פי	escr.	LPII	JN: .	DEQ.	ID M):05						
GTAACCGTTC GAAAAGTGTA CTTACGTTTT ATTTCCAGCA TGGTCC ,46																
(2)	INFORMATION FOR SEQ ID NO:86:															
	 (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 369 base pairs (B) TYPE: nucleic acid (C) STRANDEDNESS: single (D) TOPOLOGY: linear 															
	(ii) MOLECULE TYPE: cDNA															
	(ix) FEATURE: (A) NAME/KEY: CDS (B) LOCATION: 1369															
(xi) SEQUENCE DESCRIPTION: SEQ ID NO:86:																
														AAA Lys 15		48
														AAC Asn		96
														TGG Trp		144
														GCC Ala		192
														AGC Ser		240
														ATG Met 95		288

(A) LENGTH: 46 base pairs(B) TYPE: nucleic acid(C) STRANDEDNESS: single(D) TOPOLOGY: linear

TAC TGT GTG AGA CGG GGG GCT TCA GGG ATT GAC TAT GCT ATG GAC TAC
Tyr Cys Val Arg Arg Gly Ala Ser Gly Ile Asp Tyr Ala Met Asp Tyr
100 105 110

336

TGG GGT CAA GGA ACC TCA CTC ACC GTC TCC TCA
Trp Gly Gln Gly Thr Ser Leu Thr Val Ser Ser
115 120

369

(2) INFORMATION FOR SEQ ID NO:87:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 123 amino acids
 - (B) TYPE: amino acid
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: protein
- (xi) SEQUENCE DESCRIPTION: SEQ ID NO:87:

Glu Val Met Leu Val Glu Ser Gly Gly Gly Leu Val Gln Pro Lys Gly
1 5 10 15

Ser Leu Lys Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Asn Asn Tyr 20 25 30

Ala Met Asn Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45

Ala Arg Ile Arg Ser Lys Ser Asn Asn Tyr Ala Thr Phe Tyr Ala Asp
50 55 60

Ser Val Lys Asp Arg Phe Thr Ile Ser Arg Asp Asp Ser Gln Ser Met 65 70 75 80

Leu Tyr Leu Gln Met Asn Asn Leu Lys Thr Glu Asp Thr Ala Met Tyr 85 90 95

Tyr Cys Val Arg Arg Gly Ala Ser Gly Ile Asp Tyr Ala Met Asp Tyr 100 105 110

Trp Gly Gln Gly Thr Ser Leu Thr Val Ser Ser

(2) INFORMATION FOR SEQ ID NO:88:

- (i) SEQUENCE CHARACTERISTICS:
 - (A) LENGTH: 318 base pairs
 - (B) TYPE: nucleic acid
 - (C) STRANDEDNESS: single
 - (D) TOPOLOGY: linear
- (ii) MOLECULE TYPE: cDNA
- (ix) FEATURE:
 - (A) NAME/KEY: CDS
 - . (B) LOCATION: 1..318

(xi) SEQUENCE DESCRIPTION: SEQ ID NO:88: CAA ATT GTT CTC TCC CAG TCT CCA GCA ATC CTG TCT GCA TCT CCA GGG 48 Gln Ile Val Leu Ser Gln Ser Pro Ala Ile Leu Ser Ala Ser Pro Gly GAA AAG GTC ACA ATG ACT TGC AGG GCC AGC TCA AGT GTA AAT TAC ATG 96 Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Ser Val Asn Tyr Met CAC TGG TAC CAG CAG AAG CCA GGA TCC TCC CCC AAA CCC TGG ATT TCT 144 His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Ser 35 40 GCC ACA TCC AAC CTG GCT TCT GGA GTC CCT GCT CGC TTC AGT GGC AGT 192 Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser 55 GGG TCT GGG ACC TCT TAC TCT CTC ACA ATC AGC AGA GTG GAG GCT GAA 240 Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu 70 75 GAT GCT GCC ACT TAT TAC TGC CAG CAG TGG AGT AGT AAC CCA CCC ACG 288 Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Pro Thr TTC GGA GGG GGG ACC ATG CTG GAA ATA AGA 318 Phe Gly Gly Gly Thr Met Leu Glu Ile Arg 100 (2) INFORMATION FOR SEQ ID NO:89: (i) SEQUENCE CHARACTERISTICS: (A) LENGTH: 106 amino acids (B) TYPE: amino acid (D) TOPOLOGY: linear (ii) MOLECULE TYPE: protein (xi) SEQUENCE DESCRIPTION: SEQ ID NO:89: Gln Ile Val Leu Ser Gln Ser Pro Ala Ile Leu Ser Ala Ser Pro Gly 1 5 10 Glu Lys Val Thr Met Thr Cys Arg Ala Ser Ser Val Asn Tyr Met His Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Ser Ala Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arq Phe Ser Gly Ser Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Arg Val Glu Ala Glu 70



Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Trp Ser Ser Asn Pro Pro Thr 85 90 95

Phe Gly Gly Thr Met Leu Glu Ile Arg